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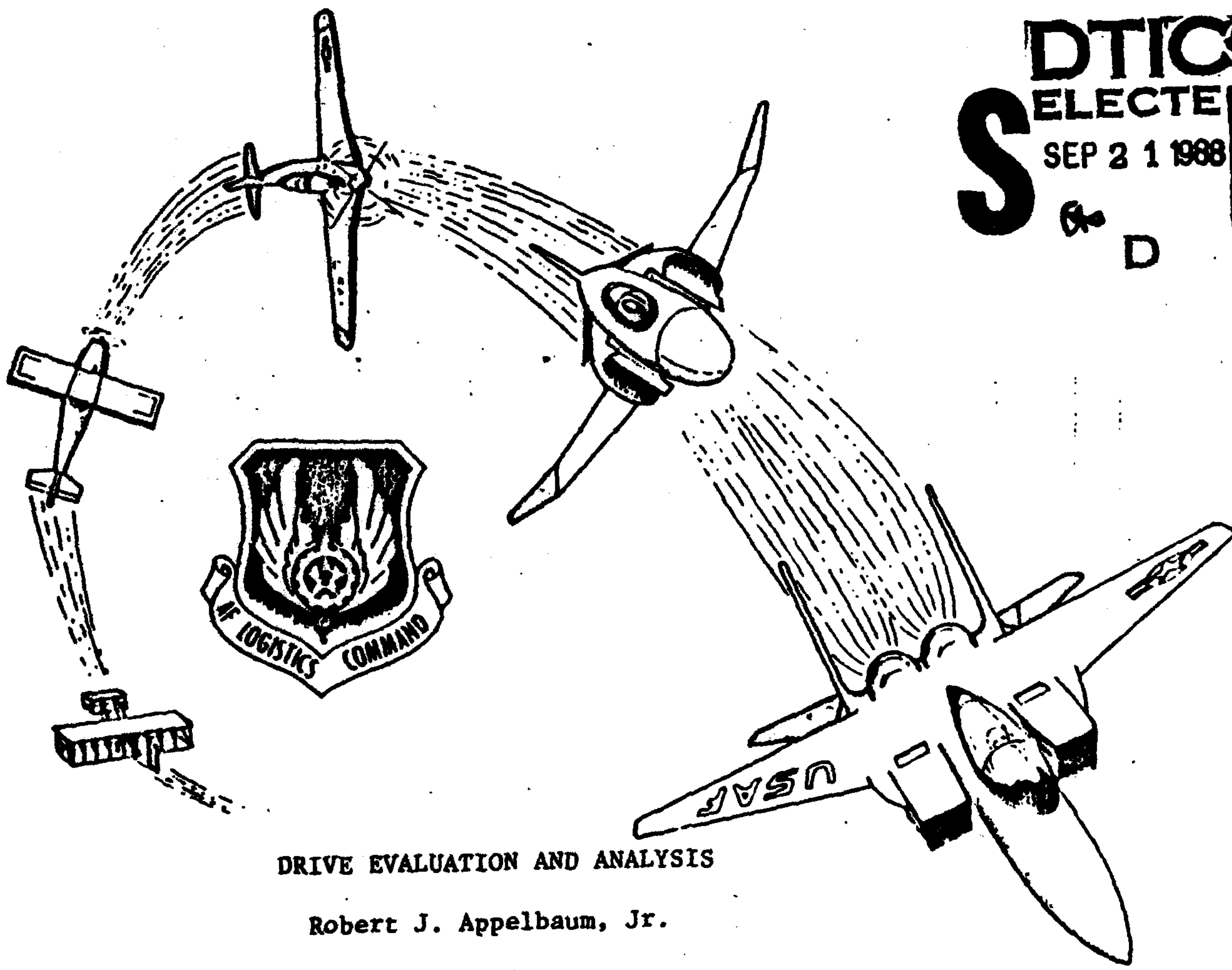

DRIVE EVALUATION AND ANALYSIS

Robert J. Appelbaum, Jr.

May 1988

Final rpt,

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE LOGISTICS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433-5001

REPLY TO ATTN OF: MMM

SUBJECT: Final Report--DRIVE Evaluation and Analysis

TO: SEE DISTRIBUTION

1. The Air Force Logistics Command was originally scheduled to test the Distribution and Repair in Variable Environments (DRIVE) model at the Ogden Air Logistics Center (OO-ALC) during a period from January to June of this year. We originally developed this data collection and evaluation plan to measure the performance of this test. Subsequent to the plan, RAND and HQ AFLC/XPS personnel evaluated DRIVE and proved it increased aircraft availability.

2. Although we have already evaluated DRIVE performance, in this report (see Attachment 2) we document our DRIVE Evaluation and Analysis plan for three reasons. First, simply to document it. Second, the plan may be useful to measure the impact of proposed future enhancements to DRIVE. We intend to use the OO-ALC DRIVE operation as a production test site. Finally, we propose to continue to collect data and track the DRIVE benefits over time. We provide our conclusions and recommendations in Attachment 1.

3. Point of contact is Mr Bob Appelbaum, HQ AFLC/MMMA, AUTOVON 787-5269.

FOR THE COMMANDER

Marvin L. Davis

MARVIN L. DAVIS, Colonel, USAF
Director, Materiel Requirements
and Financial Management
DCS/Materiel Management

2 Atch
1. Conclusions and Recommendations
2. Final Report

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. DRIVE prioritizes repair and distributes serviceable assets to maximize peacetime and wartime aircraft availability.

2. DRIVE has five major advantages over the current MISTR system.

   a. DRIVE's repair requirement and prioritization decisions are directly related to weapon system availability goals rather than back order goals.

   b. DRIVE uses current data on asset position and carcass availability rather than data which is 6 to 9 months old.

   c. DRIVE distributes assets to the base with the most pressing aircraft availability need rather than first come first serve according to MILSTRIP priorities.

   d. DRIVE explicitly considers the SRU/LRU indenture relationship when determining repair and distribution trade-offs.

   e. DRIVE provides an explicit return on investment--repair dollars, maintenance man hours or capacity use can be directly related to aircraft availability.

3. The Ogden Air Logistics Center (OO-ALC) is currently using DRIVE to demonstrate the feasibility of the DRIVE concept and the impact of DRIVE on mission support.

4. To continue to evaluate DRIVE and any future proposed enhancements to DRIVE, AFLC needs to know what data to collect and how to use the data to measure the effect of using DRIVE.

5. The evaluation technique proposed in this report will quantifiably measure the effects of using DRIVE on the depot and on the Air Force mission.

6. This data is being used to develop a benefits analysis for DRIVE.

RECOMMENDATIONS

1. Continue the use of DRIVE at the Ogden Air Logistics Center. (OPR: HQ AFLC/MM and OO-ALC/MM)

2. Continue the development and implementation of DRIVE. (OPR: HQ AFLC/MM and LMSC/SMW OCR: HQ AFLC/XPS)

3. Use the OO-ALC operation to test enhancements to the DRIVE model and to the procedures used to work with DRIVE. (OPR: HQ AFLC/DS/MA/MM/XPS)

4. Use the evaluation method outlined in this report to continue to measure DRIVE benefits and the effects of proposed changes to DRIVE. (OPR: HQ AFLC/DS/MA/MM and OO-ALC/DS/MA/MM)

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ABSTRACT

The Distribution and Repair in Variable Environments (DRIVE) model is being used to identify repair and distribution decisions in three avionics repair shops at the Ogden Air Logistics Center (OO-ALC). This report outlines an evaluation and analysis technique to measure the performance of DRIVE.

EXECUTIVE SUMMARY

~~In~~ this report ~~we~~ documents a method for measuring the performance of the Distribution and Repair in Variable Environments (DRIVE) model currently being used in three avionics repair shops at the Ogden Air Logistics Center (OO-ALC).

This plan was originally designed to be used to prove the benefits of DRIVE during a period from January to June 1988. However, personnel from the RAND Corporation and Headquarters, Air Force Logistics Command (HQ AFLC) used previously collected data from a period from April 1987 to June 1987 to identify the benefits of DRIVE.

The author ~~We~~ documents this report for three reasons: 1) ~~First,~~ simply to document it; 2) ~~Second~~, the plan may be useful the measure the impact of proposed future enhancements to DRIVE. We intend to use the OO-ALC DRIVE operation as a production test site. 3) ~~Finally,~~ we propose to continue to collect data and track the DRIVE benefits over time. Keywords: Air Force Logistics Command

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CHAPTER 1
THE PROBLEM

BACKGROUND

The Air Force Logistics Command tested the Distribution and Repair In Variable Environments (DRIVE) model at the Ogden Air Logistics Center (OO-ALC). The model was developed by the RAND Corporation under Project Air Force and is a direct result of the RAND Uncertainty Project. The DRIVE model prioritizes repair and distribution actions in order to maximize aircraft availability-given existing asset and maintenance capacity constraints. The major premise of DRIVE is that demands in both peacetime and wartime will be so unpredictable due to the dynamics of the operational environment that the depot must be able to react in a short period of time if the Air Force is to maintain peacetime and wartime capability. The purpose of the OO-ALC demonstration was to determine if the DRIVE model can be applied to the depot environment and to determine if DRIVE can provide better operational support than the current repair system.

We originally developed this DRIVE data collection and evaluation plan to measure the performance of DRIVE over a six month period starting in January 1988. Subsequent to the plan, RAND and HQ AFLC/XPS personnel evaluated DRIVE and proved it increased aircraft availability. Therefore, our proposed evaluation plan is no longer needed to prove the benefits of DRIVE. We document our plan in this report for three reasons. First, simply to document it. Secondly, the plan may be useful to measure the impact of proposed future enhancements to DRIVE. We intend to use the OO-ALC DRIVE operation as a production test site. Finally, we propose to continue to collect data and track the DRIVE benefits over time.

PROBLEM STATEMENT

AFLC needed a method to analyze and evaluate the OO-ALC DRIVE demonstration. There must be a documented method for quantifying the effects of using the DRIVE model to prioritize repair and distribution actions to determine whether the anticipated benefits of DRIVE warrant the replacement of the current system.

OBJECTIVES

1. Develop a method to quantify the effects of DRIVE that can be used to determine whether DRIVE is applicable to the current Air Force depot environment.

2. Develop a method to quantity the operational benefits of DRIVE to determine if it is better than the current repair and distribution processes.

3. Document the data collection and evaluation plan for future use to evaluate proposed enhancements to DRIVE.

CHAPTER 2
DRIVE EVALUATION AND ANALYSIS

OVERVIEW

We divide this chapter into three sections. In the first section we briefly describe the DRIVE model--what it does and how it does it. In section two we outline our proposal for quantifying the effects of the DRIVE model. In the third section we discuss the current status of the demonstration and analysis.

THE DRIVE MODEL

The DRIVE model is a software model which determines repair and distribution priorities for reparable items in the Air Force (AF) inventory. DRIVE uses current worldwide asset data and the expected near-term peacetime and wartime flying requirements of weapon systems at specific operating locations to prioritize depot repair and asset allocation. Using an aircraft availability algorithm, DRIVE determines what assets are needed at each operating location and translates this need into specific depot level repair priorities. It considers the existing resource constraints and identifies a list of repair priorities that yield the greatest increase in the probability of achieving aircraft availability goals per repair resource expended. In addition, DRIVE identifies the location that each serviceable asset should be shipped to in order to achieve the greatest return in aircraft availability.

DRIVE uses data on near-term flying requirements for both peacetime and wartime to determine what assets are needed in the field. For peacetime forecasts, DRIVE uses a planning horizon of about three weeks--a two week production period plus an average order and ship time for each item. For wartime forecasts, DRIVE uses the first 30 days of the war as the wartime planning horizon. As a result, for locations with wartime taskings, DRIVE "sees" the three week peacetime planning horizon plus the 30 day war scenario. In addition to the flying requirements, DRIVE uses aircraft availability goals by location, worldwide asset data that includes serviceable and unserviceable asset positions at the depot and at each operating location (all conditions), repair capacity data, and component data on demand rates, repair hours, replacement factors etc.

The DRIVE prioritization logic is an extension of the Dyna-METRIC logic which is now being used to assess weapon system capability and to compute War Readiness Spares Kits/Base Level Self Sufficiency spares (WRSK/BLSS) requirements. DRIVE computes the total expected demands at each operating location, by item, and develops a probability of demand distribution for each item at each base. It then uses this distribution and the current asset position to compute the probability of achieving each

location's aircraft availability goal and assesses the impact of adding a serviceable asset for each item at each location. After doing this, DRIVE determines the "best" way to satisfy the demand--defined as the method using the least repair resources. The methods that can be used include the shipping of an Line Replaceable Unit (LRU) or Shop Replaceable Unit (SRU) from depot stock, repairing an SRU to satisfy a depot or a base awaiting parts (AWP) LRU, inducting a new unserviceable LRU for repair, inducting a new unserviceable SRU for repair, or supplying a "package" of SRUs to fill a depot or base level AWP. DRIVE then recommends the shipment of the serviceable assets to the location which yields the greatest increase in the probability of achieving the aircraft availability goals--based on the computed probability distribution.

DRIVE has five major advantages over the current MISTR system. First, DRIVE's repair requirement and prioritization decisions are directly related to weapon system availability goals rather than back order or other maintenance production goals. Second, DRIVE uses current data on asset position and carcass availability rather than data which is six to nine months old. Third, DRIVE distributes assets to the base with the most pressing aircraft availability need rather than first come first serve according to MILSTRIP priorities. Fourth, DRIVE explicitly considers Shop Replaceable Unit (SRU)/Line Replaceable Unit (LRU) relationships when determining repair and distribution trade-offs. Last, DRIVE provides an explicit return on investment--repair dollars, maintenance man hours or capacity use can be directly related to aircraft availability.

PROPOSED EVALUATION TECHNIQUE

This section is split into two sub-sections. The first documents the evaluation method we propose. The second details the assumptions to be used in the evaluation and the external events which impact the evaluation. Appendix A details the data collection requirement of the proposed evaluation technique.

Evaluation Technique

We propose a two-pronged approach to the evaluation of DRIVE: 1.) evaluation based on DRIVE's ability to better respond to the operational needs of the field, and 2.) the feasibility of using DRIVE in an AF depot environment. In this section we outline each area in detail using a "stated hypothesis approach. We identify the hypothesis, the data required for evaluation of the hypothesis, and the method of analysis to be used.

RESPONSE TO OPERATIONAL NEEDS. The DRIVE model, through the use of more current data and an aircraft availability algorithm, will increase the Air Force's ability to support short term operational needs while still responding to long term changing priorities and the ever changing mix of requirements.

<u>HYPOTHESIS 1:</u> The DRIVE model will more accurately define the customer's repair requirement and will prioritize repair so that we come closer to achieving the stated aircraft availability goals.

Data Required:
a. The quarterly D041 computed requirement.
b. The total quarterly D073-X21 requirement.
c. The initial negotiation quantities.
d. The 90-Day DRIVE requirement as shown on the unconstrained production list.
e. The quarterly DRIVE requirement as shown on the constrained production list.
f. The actual quantity of production for the DRIVE items during the demonstration.
g. The quarterly negotiation quantity for the DRIVE items before the demonstration.
h. The quarterly level of production for the DRIVE items before the demonstration.

Actions Required: Compare the different estimates of the quarterly repair requirement (D041, D073, Negotiation Quantity, etc.) to the 90-Day DRIVE stated requirement (based on aircraft availability goals). Next, compute a MISTR "production factor" by stock number which estimates the level of production based on the negotiated quantities. Next, compare the production under DRIVE and the estimated production under MISTR (based on the production factor) with the repair requirement defined by the stated aircraft availability goals. This will be used to determine if the DRIVE model will better identify the true repair requirement and prioritize repair so that we come closer to achieving the stated aircraft availability goals.

<u>HYPOTHESIS 2:</u> The DRIVE model, through better end item (both LRUs-Line Replaceable Units and SRUs-Shop Replaceable Units) repair requirement determination, will assist in more accurately forecasting the component parts necessary for end item repair.

Data Required:
a. The initial negotiation quantities.
b. The 90-Day DRIVE requirement.
c. The actual quantity of production for the DRIVE items during the demonstration.
d. The quarterly negotiation quantity for the DRIVE items before the demonstration.
e. The quarterly level of production for the DRIVE items before the demonstration.

f. The unserviceable asset position for the DRIVE items at the start of each quarter.
g. The MISTR estimates of the number of reparable generations through the quarter.
h. The DRIVE estimates of the number of reparable generations through the quarter.
i. The actual number of reparable generations through the quarter.

Actions Required: First, compute the production factor by stock number using the MISTR negotiated and production quantities before the DRIVE demonstration. Next, apply this to the negotiated quantities and estimate the level of production based on the MISTR system. Next, sum the unserviceable asset position and the estimated reparable generations through the quarter under each system. Next, sum the unserviceable asset position with the actual number of reparable generations over the quarter to determine the actual number of unserviceable assets available for repair during the quarter. Compare the estimates of available unserviceable assets under the two systems with the actual number of unserviceable assets available for repair during the quarter. Now, compare the levels of production under the two systems with the estimates of unserviceable assets under the two systems and with the stated quarterly requirement under the two systems and with the actual number of unserviceable assets available for repair during the quarter. This will be used to determine which system can be used to better forecast bit and piece parts requirements.

HYPOTHESIS 3: The DRIVE model, through the prioritization of repair and through the allocation of serviceable assets, will provide better aircraft availability than the current requirements determination and asset allocation system.

Data Required:
a. Actual number of MICAPs per month for each item in the DRIVE demonstration.
b. Actual number of MICAPs per month for each DRIVE item under the MISTR system.
c. The flying hour program for the F-16 before the DRIVE demonstration.
d. The flying hour program for the F-16 during the DRIVE demonstration.
e. The asset position by base and by item at the start of each quarter.
f. The asset allocation decisions under DRIVE each two week cycle.
g. The normal requisitions under the FAD/UND system each two week cycle.
h. The actual shipment decisions of the IM each two week cycle.
i. The actual demand rate used in the DRIVE algorithm for the all DRIVE items.
j. The number of NMCS at D+30 for each DRIVE item before the demonstration.
k. The number of NMCS at D+30 for each DRIVE item during the demonstration.

Actions Required: First, use the Dyna-METRIC model to assess the level of aircraft availability achieved under each of the three allocation schemes. To do this, use the beginning asset position and add (separately) to this, the DRIVE allocation decisions, the normal incoming requisitions, and the actual IM allocation decisions. Then use the flying hour program and the demand rate to estimate the demand pattern over the planning horizon. This will then be subtracted from the total asset position (defined above) in order to estimate the ending asset position which results from each of the allocation schemes. Then, input the different stockage positions achieved through the different allocation schemes to the Dyna-METRIC model to assess the level of aircraft availability achieved. Next, compute a MICAP to flying hour ratio for each of the two systems (DRIVE and MISTR). Track the number of NMCS aircraft (based on the Dyna-METRIC assessment) over time. Make inference about the achieved level of aircraft availability under the two systems based on the data collected.

METHOD FEASIBILITY. Currently, an Air Force (AF) depot is not geared for consistent short term responses to changing operational needs. The DRIVE model requires the depot to be more sensitive to operational needs through the prioritization of repair and the allocation of serviceable assets. Because of the vast array of depot operations affected by the DRIVE model, the evaluation must consider the feasibility of operating an AF depot under a DRIVE-like concept. Feasibility must be determined based on the ability of the depot to adapt to the new method of operation (based on quantifiable measures of effectiveness) without significant reductions in efficiency.

HYPOTHESIS 4: The DRIVE model will have little effect on the total cost of repair or the number of maintenance man-hours expended to achieve a increased level of aircraft availability.

Data Required:
a. Number of man-hours expended on DRIVE workload each month.
b. The quarterly production quantities during the DRIVE demonstration.
c. The production factor for all of the items in the DRIVE demonstration.
d. The estimated production under the MISTR system.
e. The end item sales price all items under the DRIVE demonstration.
f. The estimated level of aircraft availability achieved each system.

Actions Required: This hypothesis attempts to measure the impact of DRIVE on the efficiency and effectiveness of maintenance. Use the man-hours and the levels of production to determine the level of production per man-hour under the two systems. Next, use the production quantities and the end item sales price under each system to estimate the cost of repair per item and per quarter under the two systems. Next, compute a cost of repair per quarter to estimated aircraft available ratio in order to estimate the repair cost per aircraft equivalent. Inference will be made about the cost of the achieved level of aircraft availability (measured in hypothesis 3) in terms of man-hours expended, production per man-hour, and the "cost" of repair per aircraft equivalent.

HYPOTHESIS 5: Maintenance is capable of producing the DRIVE requirement each two week production cycle.

Data Required:
a. The 90-Day DRIVE requirement as shown on the unconstrained production list.
b. The 90-Day DRIVE requirement as shown on the constrained production list.

c. The actual level of production each two week production period.
d. The quantity of each item on work order each two week production cycle.
e. The actual level of production for non-DRIVE workload each two week period.
f. The number of MICAPs each month.
g. The flying hour program for the F-16 before the DRIVE demonstration.
h. The flying hour program for the F-16 during the DRIVE demonstration.

Actions Required: This hypothesis attempts to measure the production capability of maintenance given the existing resource mix. Compare the suggested production quantities with the actual level of production to determine the percent of the DRIVE suggested repair quantities which MA can actually produce each two week cycle. In addition, compute a production to flying hour ratio to normalize production over the increase in the demand for items associated with the increase in the flying hour program. Track the production of non-DRIVE workload and the quantity of items on work order through the quarter. Make inference regarding maintenance's ability to produce the stated requirement (based on aircraft availability goals).

<u>HYPOTHESIS 6:</u> The DRIVE model, through the prioritization of repair, does not significantly increase the overall problem of Awaiting Parts (AWP) and will actually reduce the AWP problem for true aircraft limiters based on a better determination of the end item repair requirement.

Data Required:
a. The actual quantity of DRIVE end items entering Awaiting Parts status.
b. The historical quantity of end items entering Awaiting Parts status.
c. The flying hour program for the F-16 before the DRIVE demonstration.
d. The flying hour program for the F-16 during the DRIVE demonstration.
e. The actual level of production for the DRIVE items under the MISTR system.
f. The actual level of production during the DRIVE demonstration.
g. The number and identification of the DRIVE items which are in the Air Force CIP.

Actions Required: Compare the number and quantity of end items entering AWP status under the MISTR system with the number and quantity of end items entering AWP status under the DRIVE system. Compute and compare AWP to flying hours ratios and AWP to production ratios under the two system. Track the production of

critical items and identify the number of units for each of these items which could not be repaired due to AWP problems. Make inference regarding the effect of the DRIVE model on the availability of component parts (reference hypothesis 5 on the forecasting of component parts) based on the data collected.

HYPOTHESIS 7: The DRIVE model, through the distribution of serviceable assets, does not have a significant effect on Distribution's ability to support depot level maintenance.

Data Required:
a. Total number of issues processed for the month using project code 153.
b. Number of issues delivered on time by delivery priority.
c. Number of issues not exceeding the standard by more than one day.
d. Number of issues not exceeding the standard by more than two days.
e. Number of issues exceeding the standard by more than two days.

Actions Required: Total the number of issues by category (deliveries "on time", "not exceeding standard by one day", not exceeding standard by two days", and "exceeding standard by more than two days") and develop ratios of category issues over total issues for each category of issue. Make inference regarding DS's ability to respond to incoming requisitions based on the data collected.

Assumptions/Considerations

The following are on-going events which will have an effect on the DRIVE demonstration. They have had some level of influence on the data collected and the evaluation measurements developed. Therefore, they must be understood when reviewing the data collected, the evaluation measurements developed, and the recommendations made as a result of the data collected.

A. The level of contractor repair has been identified and removed from the Repair Requirement Computation System (D073) requirement. In addition, the contribution of contractor repair to asset availability must be identified and considered when making conclusions based on the data collected.

B. The accelerated "bed-down" of aircraft at some bases may have a negative effect on measures of aircraft availability. This "bed-down" will cause an overall shortage of resources resulting from a combination of an inventory level which has remained relatively constant throughout the demonstration period and an increase in the demand for serviceable assets (due to the increase in the number of aircraft and hours flown). Changes in PAA (Programmed Aircraft Authority) and mission requirements (CC, TF, etc.) will be tracked over time.

C. Changes in the number of bases, operating missions, and mix of aircraft and flying hour programs will have an effect on measures of aircraft availability. These changes in force structure will translate into changes in the number of demands by location and, given a relatively static inventory of serviceable assets, may result in an overall shortage of resources and a possible negative effect on measures of aircraft availability.

D. The availability of "bit and piece" parts will have a great effect on the ability to produce the DRIVE stated requirement; and therefore the ability to achieve the stated aircraft availability goals. The DRIVE model will implicitly prioritize the purchase of bit and piece parts through the prioritization of end item repair based on aircraft availability goals. Bit and piece part requirements are not determined based on the DRIVE model. However, the determination of the "aircraft availability limiters" and the follow-on determination of the range and depth of bit and piece items necessary for the repair of these items is required for future enhancements. Therefore, bit and piece parts problems identified as a result of DRIVE priorities will be documented throughout the demonstration effort. Given the current model limitations, the availability of bit and piece parts may have a negative impact on measures of aircraft availability and must be considered when drawing conclusions based on the data collected.

E. The availability of repair test stands will have an influence on the level of aircraft availability achieved during the DRIVE demonstration. As a result, test stand down time must be considered when drawing conclusions regarding the achieved level of aircraft availability.

STATUS

The DRIVE evaluation period was originally designated to be from 1 January 1988 to 30 June 1988. During this period, the data outlined in this report was to be collected and evaluated. However, OO-ALC started to use DRIVE in September 1986 and actually used DRIVE to prioritize repair for selected F-16 spares beginning in October 1986. Personnel at OO-ALC were already collecting much of the data included in this plan. RAND and HQ AFLC/XPS personnel then used this data to evaluate the performance of DRIVE for the April- June 1987 production quarter and continued to document performance through March 1988. Their analysis showed DRIVE increased F-16 aircraft availability rates from 57 to 63 percent--that is the equivalent of 33 more aircraft on day 30 of the war. It should be noted that the 6 percent gain in performance was sustained throughout the evaluation period and continues equal to or better than that achievement as this analysis is published We briefed the DRIVE evaluation results to the AFLC Board and Council and they approved DRIVE for development in the Weapon System Management Information System (WSMIS) in April 1988. The development/implementation schedule is provided in Table 2-1.

DRIVE IMPLEMENTATION SCHEDULE

PHASE	IMPLEMENTATION ACTION	IOC
1	Qtrly DPEM Allocation and Biweekly Repair Prioritization	FY90-3
2	Interface with SC&D--Automated Asset Allocation	FY91-1
3	Interface with DMMIS--Repair Priority Identification	FY91-1
4	Interface with CDMS--Contract Data Feed to DRIVE	FY92-3

TABLE 2-1

As shown in Table 2-1, DRIVE will have a phased development and implementation effort. Phase 1 will include the quarterly allocation of Depot Purchased Equipment Maintenance (DPEM) funds and the implementation of the bi-weekly repair prioritization process. The quarterly allocation identifies a repair requirement constrained to existing resources. The DRIVE process allows for weapon system trade-offs to help with allocation of funds and shop capacity. The bi-weekly repair prioritization will use DRIVE to identify the relative priority of repair requirements and the quantity of an item that should be repaired in the short-term. In phase 2 we propose the implementation of the asset allocation portion of DRIVE. This will be done with an interface between DRIVE and the Stock, Control, and Distribution (D035) system and involves the actual allocation of serviceable assets using the DRIVE distribution logic. Phase 3 includes an interface with the Depot Maintenance Management Information System (DMMIS) to identify DRIVEs repair priorities to depot maintenance. Phase 4 involves an interface with the Contract Data Management System (CDMS) to make contractor data available to DRIVE.

The information and data outlined in this report have been collected and are still being collected to construct a benefit analysis for DRIVE. This information and some preliminary analysis has been used to as the basis for the decision to develop DRIVE. If the decision is made to continue to use DRIVE at the OO-ALC, the evaluation data and method outlined in this report should be viewed as a baseline for comparative analysis. As changes in the model and the procedures used for DRIVE are made, this data can help quantify the effects of the changes made and determine if the changes should be included in the production version of DRIVE.

CHAPTER 3
CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. DRIVE prioritizes repair and distributes serviceable assets to maximize peacetime and wartime aircraft availability.

2. DRIVE has five major advantages over the current MISTR system.

a. DRIVE's repair requirement and prioritization decisions are directly related to weapon system availability goals rather than back order goals.

b. DRIVE uses current data on asset position and carcass availability rather than data which is six to nine months old.

c. DRIVE distributes assets to the base with the most pressing aircraft availability need rather than first come first serve according to MILSTRIP priorities.

d. DRIVE explicitly considers the SRU/LRU indenture relationship when determining repair and distribution trade-offs.

e. DRIVE provides an explicit return on investment--repair dollars, maintenance man hours or capacity use can be directly related to aircraft availability.

3. The Ogden Air Logistics Center (OO-ALC) is currently using DRIVE to demonstrate the feasibility of the DRIVE concept and the impact of DRIVE on mission support.

4. To continue to evaluate DRIVE and any future proposed enhancements to DRIVE, AFLC needs to know what data to collect and how to use the data to measure the effect of using DRIVE.

5. The evaluation technique proposed in this report will quantifiably measure the effects of using DRIVE on the depot and on the Air Force mission.

6. This data is being used to develop a benefits analysis for DRIVE.

RECOMMENDATIONS

1. Continue the use of DRIVE at the Ogden Air Logistics Center. (OPR:HQ AFLC/MM and OO-ALC/MM)

2. Continue the development and implementation of DRIVE. (OPR:HQ AFLC/MM and LMSC/SMW) (OCR:HQ AFLC/XPS)

3. Use the OO-ALC operation to test enhancements to the DRIVE model and to the procedures used to work with DRIVE. (OPR:HQ AFLC/MM/MA/DS/XPS)

4. Use the evaluation method outlined in this report to continue to measure DRIVE benefits and the effects of proposed changes to DRIVE. (OPR:HQ AFLC/MM/MA/DS and OO-ALC/MM/MA/DS)

APPENDIX A
DRIVE DATA COLLECTION REQUIREMENTS

The following is a list of the data elements that must be collected and the office of primary responsibility for the collection of the data needed to perform the evaluation and analysis outlined in the following pages.

a. Total time each test stand was operational each two week cycle. Collection OPR-OO-ALC/MAWWW.

b. Total time each test stand was not operational each two week cycle. Collection OPR-OO-ALC/MAWWW.

c. The standard time of operation for each test stand each two week cycle. Collection OPR-OO-ALC/MAWWW.

d. The number of bases supported through repair at the OO-ALC at the start of the DRIVE demonstration. Collection OPR-OO-ALC/MMMD.

e. The number of bases supported through repair at the OO-ALC during the DRIVE demonstration. Data collection OPR-OO-ALC/MMMD.

f. Changes in Squadron or Fleet composition by location (includes PAA, CC, TF etc.). Collection OPR-OO-ALC/MMMD.

g. The number of aircraft at each base and in each unit that was supported through repair at the OO-ALC before the DRIVE demonstration was begun. Data Collection OPR-OO-ALC/MMMD.

h. The number of aircraft at each base and in each unit that is supported through repair at the OO-ALC during the DRIVE demonstration. Data Collection OPR-OO-ALC/MMMD.

i. The flying hour program for the F-16 before the DRIVE demonstration. Collection OPR-HQ AFLC/MMMA.

j. The flying hour program for the F-16 during the DRIVE demonstration. Collection OPR-OO-ALC/MMA/MMMD.

k. The quarterly D041 computed requirement. Collection OPR-OO-ALC/MMMD.

l. The total quarterly D073-X21 requirement. Collection OPR-OO-ALC/MMMD.

m. The percent contracted out for all of the items in the DRIVE test. Collection OPR-OO-ALC/MMMD.

n. The number of serviceable assets received from contractor activities and distributed to base level during each quarter.

o. The initial quarterly negotiation quantities which result from the MM/MA "Face to Face" negotiations. Collection OPR-OO-ALC/MMMD.

p. The quarterly negotiation quantity for the DRIVE items before the DRIVE demonstration. Collection OPR-HQ AFLC/MMMA.

q. The 90-Day DRIVE requirement as shown on the unconstrained production list. The DRIVE requirement will be defined as the number of repairs needed to reach 100% aircraft availability at peace-tasked bases and 85% aircraft availability at war-tasked bases. The reason for the 100% aircraft availability at peace-tasked bases has to do with the way WRSK is handled in the DRIVE model. If the aircraft availability goal is less than 100%, the model will not allocate sufficient serviceable assets to those bases without a wartime tasking because of the "need" for these items within WRSK kits at war-tasked bases. The 85% aircraft availability goal for war-tasked bases is being used in order to fully workload the maintenance shops (given an item probability of 50%). Collection OPR-OO-ALC/MMMD.

r. The quarterly DRIVE requirement as shown on the constrained production produced by the 90 day DRIVE model. (based on aircraft availability goals). Collection OPR-OO-ALC/MMMD.

s. The actual quantity of production for the DRIVE items during the DRIVE demonstration. Collection OPR-OO-ALC/MMMD.

t. The quarterly level of production for the DRIVE items before the DRIVE demonstration. Collection OPR-HQ AFLC/MMMA.

u. The actual level of production for non-DRIVE workload in each of the shops each two week production period. Collection OPR-OO-ALC/MAWWW.

v. The production factor by item for all of the items in the DRIVE demonstration. Collection OPR-HQ AFLC/MMMA.

w. The estimated production under the MISTR system based on the current negotiated quantities. Collection OPR-HQ AFLC/MMMA.

x. The unserviceable asset position at the start of each quarter for the items under the DRIVE demonstration. Collection OPR-OO-ALC/MMMD.

y. The MISTR estimates of the number of reparable generations through the quarter. Collection OPR-OO-ALC/MMMD.

z. The 90-Day DRIVE estimates of the number of reparable generations through the quarter. Collection OPR-OO-ALC/MMMD.

aa. The actual number of reparable generations through the quarter (as depicted on the D041 Factor Printouts). Collection OPR-OO-ALC/MMMD.

bb. The quantity of each item on work order each two week production cycle. Collection OPR-OO-ALC/MAWWW.

cc. The actual quantity of end items entering Awaiting Parts status (split out by condition code F and G) per stock number for all items under the DRIVE demonstration. Collection OPR-OO-ALC/MAWWW.

dd. The historical quantity of end items entering Awaiting Parts status per stock number for all items under the DRIVE demonstration while under the MISTR system. Collection OPR-OO-ALC/MAWWW and HQ AFLC/MMMA.

ee. The serviceable asset position by base at the start of each quarter. Collection OPR-OO-ALC/MMMD.

ff. The asset allocation decisions under DRIVE each two week cycle. Collection OPR-OO-ALC/MMMD.

gg. The normal requisitions under the FAD/UND system each two week cycle. Collection OPR-OO-ALC/MMMD.

hh. The actual shipment decisions of the IM each two week cycle. Collection OPR-OO-ALC/MMMD.

ii. Total number of issues processed for the month using project code 153. Accumulate data by delivery priority code 3 or 6. Collection OPR-OO-ALC/DSS.

jj. Number of issues delivered on time by delivery priority. Collection OPR-OO-ALC/DSS.

kk. Number of issues not delivered on time but not exceeding the standard by more than one day. Collection OPr-OO-ALC/DSS.

ll. Number of issues not delivered on time but not exceeding the standard by more than two days. Collection OPR-OO-ALC/DSS.

mm. Number of issues not delivered on time and exceeding the standard by more than two days. Collection OPR-OO-ALC/DSS.

nn. Actual number of MICAPs per month for each item in the DRIVE demonstration. Collection OPR-HQ AFLC/MMMA.

oo. Actual number of MICAPs per month for each item in the DRIVE demonstration under the MISTR system. Collection OPR-HQ AFLC/MMMA.

pp. The actual demand rate used in the DRIVE algorithm for the items in the DRIVE demonstration. Collection OPR-OO-ALC/MMMD.

qq. Number of man-hours expended on DRIVE workload each month under the DRIVE demonstration. Collection OPR-OO-ALC/MAWWW.

rr. The end item sales price (the sales price is the price that maintenance "charges" material management for the repair of end items) for all items under the DRIVE demonstration. Collection OPR-OO-ALC/MAWWW.

ss. The estimated level of aircraft availability achieved under the different systems (estimated using Dyna-METRIC in hypothesis 3).

tt. The number of Not Mission Capable Status (NMCS) aircraft at day D+30 for each DRIVE item before the demonstration. Collection OPR-HQ AFLC/MMMA.

uu. The number of Not Mission Capable Status (NMCS) aircraft at day D+30 for each DRIVE item during the demonstration. Collection OPR-HQ AFLC/MMMA.

vv. The number and the identification (NSN) of each DRIVE item which is in the Air Force Critical Item Program (CIP). Collection OPR-HQ AFLC/MMMA.